EFFICIENT PERCEPTUAL/PHYSICAL COLOR SPACE CONVERSION

ABSTRACT OF THE DISCLOSURE

An imaging or other sensory reproduction system efficiently converts image or other sensory data between a perceptual color space (e.g., the sRGB color space) and a physical color space (unity gamma) or other perceptual/physical sensory models that are related by an expression involving a computationally expensive exponential function. The imaging system calculates exponential functions that can be composed from computationally inexpensive operations, such as square root, square, reciprocal, as well as multiplications and/or additions and subtractions. These computationally less expensive functions are then combined, such as in a weighted and/or offset mean, summation or difference to approximate the computationally expensive exponential function. The imaging system evaluates the expression using the approximation to efficiently yield the converted image data. The efficient conversion between perceptual and physical color spaces allows operations, such as blending and anti-aliasing, to be performed in the physical color space before display of a perceptual color space image.